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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,973	05/02/2006	Qingmao Hu	7482P001	2251

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EXAMINER	
LE, TOAN M	
ART UNIT	**PAPER NUMBER**
2863	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/19/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/530,973	HU ET AL.	
	Examiner	Art Unit	
	Toan M. Le	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-12 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The method/apparatus claims do not produce a tangible result. It is unclear how the result is being stored, displayed, or used in any tangible manner. In order to overcome the rejection, claim language should be added that includes displaying, storing or conveying used in tangible result. To view the new guidelines for 35 U.S.C 101 please view the following OG notice.

http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm

Claim Objections

Claim 7 is objected to because of the following informalities:

The inequalities $|p_1^* - p_1(i)| \leq \Delta_1$, $|p_2^* - p_2(i)| \leq \Delta_2$, ... $|p_k^* - p_k(i)| \leq \Delta$

wherein p_1^*, p_2^*, p_k^*, Δ_1, Δ_2, Δ are not defined.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 and 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by "Automatic Segmentation of 3D-MRI Data Using a Genetic Algorithm", Moller et al. (referred hereafter Moller et al.).

Referring to claim 1, Moller et al. disclose a method of processing an experimental data-set comprising inlier data points representative of a model and outlier data points which are not representative of the model, to identify which of the data points are the said outlier data points, the model being a predetermined function of K unknown parameters, the method comprising:

generating a plurality of subsets of the data points, each subset comprising at least K' data points, where K' is the number of data points which will uniquely determine the K parameters;

for each subset estimating the K parameters of the model (pages 278-279, 2. Histogram Computation section);

identifying at least one location in the parameters space at which the estimates are clustered (figure 1); and

identifying as said outlier data points data points which are not representative of the model as defined based on peak parameter values corresponding to said location (pages 279-280, 3. Thresholds Computation section).

As to claim 2, Moller et al. disclose a method of processing an experimental data-set comprising inlier data points representative of a model and outlier data points which are not representative of the model, to identify which of the data points are the said outlier data points, the model being a predetermined function of K unknown parameters in which each of the subsets comprises exactly said K' or more than said K' data points (page 279, 3. Threshold Computation section: 1st and 2nd paragraphs).

Referring to claim 3, Moller et al. disclose a method of processing an experimental data-set comprising inlier data points representative of a model and outlier data points which are not representative of the model, to identify which of the data points are the said outlier data points, the model being a predetermined function of K unknown parameters in which all possible subsets with at least said K' points are generated (page 279, 3. Threshold Computation section: 1st and 2nd paragraphs).

As to claim 4, Moller et al. disclose a method of processing an experimental data-set comprising inlier data points representative of a model and outlier data points which are not representative of the model, to identify which of the data points are the said outlier data points, the model being a predetermined function of K unknown parameters in which the said peak parameters are identified based on histogram analysis, including the following steps:

1) generating all the possible said subsets from the N input data points, with each said subset having same number of data points and containing at least said K' data points, the number of said subsets being denoted as M;

2) for each said subset, calculating the K parameters of the said subset as a respective point in the said K-dimensional parameter space (pages 278-279, 2. Histogram Computation section);

3) plotting a histogram of the said parameter points (figure 1);

4) finding the peaks of the said histogram and finding the said peak parameters (p_1*, p_2*, . . . , p_k *) from all the possible candidate peak parameters which are parameters corresponding to different histogram peaks (page 279, 3. Threshold Computation section: 1st and 2nd paragraphs).

Referring to claim 5, Moller et al. disclose a method of processing an experimental data-set comprising inlier data points representative of a model and outlier data points which are not representative of the model, to identify which of the data points are the said outlier data points, the model being a predetermined function of K unknown parameters in which the said histogram in the said K-dimensional parameter space is obtained either by.

1) a user specifying the neighborhood sizes in each coordinate of the said parameter points in the said K-dimensional parameter space, or

2) deriving the neighborhood sizes from the said M parameter points in the said K-dimensional parameter space automatically using said data points (page 280, 4.Threshold Segmentation section; 5. Growing section; figure 3).

As to claim 6, Moller et al. disclose a method of processing an experimental data-set comprising inlier data points representative of a model and outlier data points which are not representative of the model, to identify which of the data points are the said outlier data points, the model being a predetermined function of K unknown parameters in which:

1) if there is only one peak in the said histogram of the said parameter points and the said number of occurrence is not less than 3, all the said parameter points within the said neighborhood sizes of the said candidate peak parameters are taken as the said cluster location, and the sole candidate peak parameters are taken as the said peak parameters; and

2) if there are more than one peak in the said histogram of the said parameter points, either (i) the said parameter point with said maximum number of occurrence is taken as the said peak parameters and all those said parameter points within the said neighborhood sizes of the said peak parameters are taken as the said cluster location, or (2) the said parameter point with

maximum sum of said number of occurrence within a neighborhood are taken as the said peak parameters, and all those said parameter points within the said neighborhood sizes of the said peak parameters are taken as the said cluster location (page 279, 3. Threshold Computation section: 1st and 2nd paragraphs).

Referring to claim 8, Moller et al. disclose a method of estimating a model from a data-set comprising the said inlier data points representative of the model and the said outlier data points which are not representative of the model, the method comprising processing the data-set using a method according to claim 1, and then estimating the K parameters of the model using the identified said inlier data points (pages 278-279, 2. Histogram Computation section).

As to claim 9, Moller et al. disclose an apparatus for determining, among an experimental data-set comprising the said inlier data points representative of a model and the said outlier data points which are not representative of the model, the model being defined by K parameters where K is a positive integer, the apparatus comprising a processor arranged to perform the steps of:

generating a plurality of subsets of the data points, each subset comprising at least K' data points;

for each subset estimating the K parameters of the model (pages 278-279, 2. Histogram Computation section);

identifying at least one location in the parameters space at which the estimates are clustered (figure 1); and

identifying as said outlier data points which are not representative of the model as defined based on peak parameter values corresponding to said location (pages 279-280, 3. Thresholds Computation section).

Referring to claim 10, Moller et al. disclose an apparatus for determining, among an experimental data-set comprising the said inlier data points representative of a model and the said outlier data points which are not representative of the model, the model being defined by K parameters where K is a positive integer in which said processor is arranged to generate said subsets as subsets which each comprise at least K' data points.

As to claim 11, Moller et al. disclose an apparatus for determining, among an experimental data-set comprising the said inlier data points representative of a model and the said outlier data points which are not representative of the model, the model being defined by K parameters where K is a positive integer in which said processor is arranged to generate all possible subsets each with at least K' data points (page 279, 3. Threshold Computation section: 1st and 2nd paragraphs).

Referring to claim 12, Moller et al. disclose an apparatus for determining, among an experimental data-set comprising the said inlier data points representative of a model and the said outlier data points which are not representative of the model, the model being defined by K parameters where K is a positive integer, further comprising means for estimating the parameters of the model using the identified said inlier data points (pages 278-279, 2. Histogram Computation section).

Allowable Subject Matter

Claim 7 is objected to as being dependent upon a rejected base claim 1 and 101 rejection, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reason for allowance of claim 7 is the inclusion of the inequalities equation.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

"Computerized Analysis of Pulmonary Nodules in Topological and Histogram Feature Spaces", Kawata et al., 2000 IEEE, Pages 332-335

"Segmentation of 3D Brain MR Using an Adaptive K-means Clustering Algorithm", Yan et al., 1995 IEEE, Pages 1529-1533

"Image Segmentation Via Adaptive K-Mean Clustering and Knowledge-Based Morphological Operations with Biomedical Applications", Chen et al., IEEE Transactions on Image Processing, Vol. 7, No. 12, December 1998, Pages 1673-1683

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan M. Le whose telephone number is (571) 272-2276. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Toan Le

November 28, 2006

MICHAEL NGHIEM
PRIMARY EXAMINER